

Amendments to and Listing of the Claims

Please cancel claims 1-25 and 30, without prejudice.

Please amend claims 28, 29, 33, 35 and 36, without prejudice, as noted below, and insert new claims 37-46 as noted below.

The status of the claims in this application following the entry of this amendment is set forth below:

1-25. (Canceled)

26. (Withdrawn) The isolated protein of claim 28, wherein the protein comprises at least twelve contiguous amino acids of a sequence selected from the group consisting of SEQ ID NOs:1-10.

27. (Withdrawn) The isolated protein of claim 28, wherein the isolated protein has an amino acid sequence selected from the group consisting of:

- (i) residues 1 to 50 of SEQ ID NO:1;
- (ii) residues 1 to 50 of SEQ ID NO:2;
- (iii) residues 1 to 50 of SEQ ID NO:3;
- (iv) residues 1 to 50 of SEQ ID NO:4;
- (v) residues 1 to 50 of SEQ ID NO:5;
- (vi) residues 1 to 50 of SEQ ID NO:6;
- (vii) residues 1 to 50 of SEQ ID NO:7;
- (viii) residues 1 to 50 of SEQ ID NO:8;
- (ix) residues 1 to 50 of SEQ ID NO:9;
- (x) residues 1 to 50 of SEQ ID NO:10;
- (xi) residues 125 to 188 of SEQ ID NO:1;
- (xii) residues 125 to 188 of SEQ ID NO:2;
- (xiii) residues 122 to 185 of SEQ ID NO:3;
- (xiv) residues 127 to 190 of SEQ ID NO:4;
- (xv) residues 125 to 188 of SEQ ID NO:5;
- (xvi) residues 132 to 195 of SEQ ID NO:6;
- (xvii) residues 131 to 194 of SEQ ID NO:7;

- (xviii) residues 131 to 194 of SEQ ID NO:8;
- (xix) residues 127 to 190 of SEQ ID NO:9;
- (xx) residues 125 to 188 of SEQ ID NO:10;
- (xxi) residues 211 to 229 of SEQ ID NO:1;
- (xxii) residues 206 to 224 of SEQ ID NO:3;
- (xxiii) residues 237 to 591 of SEQ ID NO:1;
- (xxiv) residues 237 to 592 of SEQ ID NO:2;
- (xxv) residues 235 to 589 of SEQ ID NO:3;
- (xxvi) residues 239 to 594 of SEQ ID NO:4;
- (xxvii) residues 237 to 591 of SEQ ID NO:5;
- (xxviii) residues 244 to 599 of SEQ ID NO:6;
- (xxix) residues 243 to 598 of SEQ ID NO:7;
- (xxx) residues 243 to 598 of SEQ ID NO: 8;
- (xxxi) residues 239 to 594 of SEQ ID NO:9; and
- (xxxii) residues 237 to 592 of SEQ ID NO:10.

28. (Currently amended) An isolated protein ~~comprising~~ consisting of at least one conserved region of SEQ ID NO:11 that consists of an amino acid sequence selected from the group consisting of:

- (i) residues 1 to 50 of SEQ ID NO:11;
- (ii) residues 109 to 120 of SEQ ID NO:11;
- (iii) residues 135 to 198 of SEQ ID NO:11;
- (iv) residues 221 to 239 of SEQ ID NO:11; and
- (v) residues 249 to 604 of SEQ ID NO:11;

and

at least one variable region of SEQ ID NO:11 that consists of an amino acid sequence selected from the group consisting of:

- (a) residues 51 to 108 of SEQ ID NO:11;
- (b) residues 121 to 134 of SEQ ID NO:11;
- (c) residues 199 to 220 of SEQ ID NO:11;and
- (d) residues 240 to 248 of SEQ ID NO:11;

wherein the isolated protein has at least one fewer variable regions than a wild-type NhhA polypeptide and wherein upon administration to a mammal the protein elicits an immune response against one or more strains of *N. meningitidis*.

29. (Currently amended) The isolated protein of claim 28, having an amino acid sequence selected from the group consisting of ~~SEQ ID NO:23; SEQ ID NO:24[[,]]; SEQ ID NO:25; SEQ ID NO:26; SEQ ID NO:27; SEQ ID NO: 33; SEQ ID NO:34; SEQ ID NO:35; SEQ ID NO:36; SEQ ID NO: 37; and SEQ ID NO:38; and SEQ ID NO:39.~~

30. (Canceled).

31. (Previously presented) A pharmaceutical composition comprising one or more isolated proteins according to claim 28 and a pharmaceutically-acceptable carrier, diluent, or excipient.

32. (Previously presented) The pharmaceutical composition of claim 31 which is immunogenic.

33. (Currently amended) ~~The~~ An isolated protein ~~of claim 28[[,]]~~ having the amino acid sequence SEQ ID NO: 23.

34. (Previously presented) A mature, processed form of the isolated protein of claim 33, having the amino acid sequence SEQ ID NO: 35.

35. (Currently amended) An isolated protein having at least 80% amino acid sequence identity with the isolated protein of claim 28, wherein amino acid sequence variability is restricted to non-conserved amino acid residues of SEQ ID NO:11.

36. (Currently amended) An isolated protein having at least 90% amino acid sequence identity with the isolated protein of claim 28, wherein amino acid sequence variability is restricted to non-conserved amino acid residues of SEQ ID NO:11.

37. (New) An isolated fusion protein comprising the isolated protein of claim 28 and at least one fusion partner protein.

38. (New) An isolated protein consisting of at least one conserved region having an amino acid sequence selected from the group consisting of:

- (i) residues 1 to 50 of SEQ ID NO:11;
- (ii) residues 109 to 120 of SEQ ID NO:11
- (iii) residues 144 to 198 of SEQ ID NO:11;
- (iv) residues 221 to 239 of SEQ ID NO:11; and
- (v) residues 249 to 604 of SEQ ID NO:11;

and

at least one variable region having an amino acid sequence selected from the group consisting of:

- (a) residue 51 of SEQ ID NO:11;
- (b) residues 52 to 54 of SEQ ID NO:11;
- (c) residues 121 to 134 of SEQ ID NO:11;
- (d) residues 199 to 220 of SEQ ID NO:11; and
- (e) residues 240 to 248 of SEQ ID NO:11.

wherein upon administration to a mammal the isolated protein elicits an immune response against one or more strains of *N. meningitidis*.

39. (New) The isolated protein of claim 38, having an amino acid sequence selected from the group consisting of SEQ ID NO:23; SEQ ID NO:24; SEQ ID NO:26; SEQ ID NO:35; SEQ ID NO:36; and SEQ ID NO:38.

40. (New) An isolated protein having at least 80% amino acid sequence identity with the isolated protein of claim 38, wherein amino acid sequence variability is restricted to non-conserved amino acid residues of SEQ ID NO:11.

41. (New) An isolated protein having at least 90% amino acid sequence identity with the isolated protein of claim 38, wherein amino acid sequence variability is restricted to non-conserved amino acid residues of SEQ ID NO:11.

42. (New) The isolated protein of claim 38, wherein the at least one conserved region amino acid sequence is selected from the group consisting of:

- (i) residues 1 to 50 of SEQ ID NO:1;
- (ii) residues 1 to 50 of SEQ ID NO:2;
- (iii) residues 1 to 50 of SEQ ID NO:3;
- (iv) residues 1 to 50 of SEQ ID NO:4;
- (v) residues 1 to 50 of SEQ ID NO:5;
- (vi) residues 1 to 50 of SEQ ID NO:6;
- (vii) residues 1 to 50 of SEQ ID NO:7;
- (viii) residues 1 to 50 of SEQ ID NO:8;
- (ix) residues 1 to 50 of SEQ ID NO:9;
- (x) residues 1 to 50 of SEQ ID NO:10;
- (xi) residues 109 to 120 of SEQ ID NO:1;
- (xii) residues 103 to 114 of SEQ ID NO:2;
- (xiii) residues 106 to 117 of SEQ ID NO:3;
- (xiv) residues 105 to 116 of SEQ ID NO:4;
- (xv) residues 109 to 120 of SEQ ID NO:5;
- (xvi) residues 106 to 117 of SEQ ID NO:6;
- (xvii) residues 105 to 116 of SEQ ID NO:7;
- (xviii) residues 105 to 116 of SEQ ID NO:8;
- (xix) residues 105 to 116 of SEQ ID NO:9;
- (xx) residues 103 to 114 of SEQ ID NO:10;
- (xxi) residues 134 to 188 of SEQ ID NO:1;
- (xxii) residues 134 to 188 of SEQ ID NO:2;
- (xxiii) residues 131 to 185 of SEQ ID NO:3;
- (xxiv) residues 136 to 190 of SEQ ID NO:4;
- (xxv) residues 134 to 188 of SEQ ID NO:5;
- (xxvi) residues 141 to 195 of SEQ ID NO:6;
- (xxvii) residues 140 to 194 of SEQ ID NO:7;
- (xxviii) residues 140 to 194 of SEQ ID NO: 8;
- (xxix) residues 136 to 190 of SEQ ID NO:9;
- (xxx) residues 134 to 188 of SEQ ID NO:10;
- (xxxi) residues 211 to 229 of SEQ ID NO:1;
- (xxxii) residues 211 to 229 of SEQ ID NO:2;

- (xxxiii) residues 206 to 224 of SEQ ID NO:3;
- (xxxiv) residues 213 to 231 of SEQ ID NO:4;
- (xxxv) residues 211 to 229 of SEQ ID NO:5;
- (xxxvi) residues 218 to 236 of SEQ ID NO:6;
- (xxxvii) residues 217 to 235 of SEQ ID NO:7;
- (xxxviii) residues 217 to 235 of SEQ ID NO:8;
- (xxxix) residues 213 to 231 of SEQ ID NO:9;
- (xl) residues 209 to 227 of SEQ ID NO:10;
- (xli) residues 237 to 591 of SEQ ID NO:1;
- (xlii) residues 237 to 592 of SEQ ID NO:2;
- (xliii) residues 235 to 589 of SEQ ID NO:3;
- (xliv) residues 239 to 594 of SEQ ID NO:4;
- (xlv) residues 237 to 591 of SEQ ID NO:5;
- (xlvi) residues 244 to 599 of SEQ ID NO:6;
- (xlvii) residues 243 to 598 of SEQ ID NO:7;
- (xlviii) residues 243 to 598 of SEQ ID NO:8.
- (xlix) residues 239 to 594 of SEQ ID NO:9; and
- (l) residues 237 to 592 of SEQ ID NO:10.

43. (New) The isolated protein of claim 38, wherein the at least one variable region amino acid is selected from the group consisting of:

- (i) residues 52 to 54 of SEQ ID NO:1;
- (ii) residues 52 to 54 of SEQ ID NO:2;
- (iii) residues 52 to 54 of SEQ ID NO:3;
- (iv) residues 52 to 54 of SEQ ID NO:4;
- (v) residues 52 to 54 of SEQ ID NO:5;
- (vi) residues 52 to 54 of SEQ ID NO:6;
- (vii) residues 52 to 54 of SEQ ID NO:7;
- (viii) residues 52 to 54 of SEQ ID NO:8;
- (ix) residues 52 to 54 of SEQ ID NO:9;
- (x) residues 52 to 54 of SEQ ID NO:10;
- (xi) residues 121 to 124 of SEQ ID NO:1;

- (xii) residues 115 to 124 of SEQ ID NO:2;
- (xiii) residues 118 to 121 of SEQ ID NO:3;
- (xiv) residues 117 to 126 of SEQ ID NO:4;
- (xv) residues 121 to 124 of SEQ ID NO:5;
- (xvi) residues 118 to 131 of SEQ ID NO:6;
- (xvii) residues 117 to 130 of SEQ ID NO:7;
- (xviii) residues 117 to 130 of SEQ ID NO:8;
- (xix) residues 117 to 126 of SEQ ID NO:9;
- (xx) residues 115 to 124 of SEQ ID NO:10;
- (xxi) residues 189 to 210 of SEQ ID NO:1;
- (xxii) residues 189 to 210 of SEQ ID NO:2;
- (xxiii) residues 186 to 205 of SEQ ID NO:3;
- (xxiv) residues 191 to 212 of SEQ ID NO: 4;
- (xxv) residues 189 to 210 of SEQ ID NO:5;
- (xxvi) residues 196 to 217 of SEQ ID NO:6;
- (xxvii) residues 195 to 216 of SEQ ID NO:7;
- (xxviii) residues 195 to 216 of SEQ ID NO: 8;
- (xxix) residues 191 to 212 of SEQ ID NO:9;
- (xxx) residues 189 to 208 of SEQ ID NO:10;
- (xxxi) residues 230 to 236 of SEQ ID NO:1;
- (xxxii) residues 230 to 236 of SEQ ID NO:2;
- (xxxiii) residues 225 to 234 of SEQ ID NO:3;
- (xxxiv) residues 232 to 238 of SEQ ID NO:4;
- (xxxv) residues 230 to 236 of SEQ ID NO:5;
- (xxxvi) residues 237 to 243 of SEQ ID NO:6;
- (xxxvii) residues 236 to 242 of SEQ ID NO:7;
- (xxxviii) residues 236 to 242 of SEQ ID NO:8;
- (xxxix) residues 232 to 238 of SEQ ID NO:9; and
- (xl) residues 228 to 236 of SEQ ID NO:10.

44. (New) An isolated fusion protein consisting of the isolated protein of claim 38 and at least one fusion partner protein.

45. (New) A pharmaceutical composition comprising one or more isolated proteins according to claim 38 and a pharmaceutically-acceptable carrier, diluent, or excipient.

46. (New) The pharmaceutical composition of claim 45 which is immunogenic.